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DEPARTMENT OF THE ARMY
OFFICE OF THE SURGEON GENERAL
5109 LEESBURG PIKE
FALLS CHURCH VA 22041-3258

REPLY TO
ATTENTION OF

DASG-PPM-SA

08 APR 2005

MEMORANDUM FOR BG James R. Moran, Program Executive Office, SAFE-SDR, 5901 Putnam Road, Building 328, Fort Belvoir, VA 22060-5422

SUBJECT: Safety of Permethrin Treated Uniforms

1. Your staff requested additional information regarding the safety and effectiveness of permethrin treated uniforms. This request is in response to our proposed letter from the Vice Chief of Staff to the Commanding General, US Army Training and Doctrine Command. In our response, we recommend Program Executive Officer, Soldier modify the existing procurement contracts for the required Desert Camouflage Uniforms and Army Combat Uniforms to be pre-treated with permethrin by the manufacturer.

2. The US Army began treating uniforms with permethrin in 1988 to prevent bites by blood feeding arthropods. This has proven to be an effective method to help prevent arthropod borne diseases such as malaria and leishmaniasis. We now have 17 years of experience using permethrin on uniforms and are convinced that permethrin treatment of field uniforms has a clear record for both efficacy and safety. In fact, a number of civilian and military agencies confirm the safety and effectiveness of permethrin treated clothing, including:

a. The US Army Center for Health Promotion and Preventive Medicine confirmed the safety of permethrin treated field uniforms (enclosure).

b. The US Centers for Disease Control and Prevention (CDC) recommends the use of permethrin treated clothing, shoes and bed nets for travelers, to include children and pregnant women (http://www.cdc.gov/travel). According to the CDC, "Like malaria, other vector-borne illnesses may be more severe in pregnancy and/or bear potential harm to the fetus. Pregnant travelers should scrupulously avoid insects with covering clothing, bed nets, use of permethrin for clothing and nets, and application of DEET-containing repellents." Also, "Personal protection against mosquitoes is an important part of prevention against malaria, yellow fever, and other diseases for which no other prophylaxis is available, such as dengue fever. Children should wear protective clothing and sleep under bed nets, both of which can be impregnated with the insecticide/repellent permethrin."

c. The Armed Forces Pest Management Board strongly encourages the use of permethrin as a safe and effective clothing repellent (http://afpmb.org).

d. In 1994 the National Academy of Sciences Committee on Toxicology (COT) published, "Health Effects of Permethrin-Impregnated Battle-Dress Uniforms" (http://www.nap.edu/books/NI000104/html/R1.html). The COT concluded that, "...soldiers who wear permethrin-impregnated BDUs are unlikely to experience adverse health effects at the suggested permethrin exposure levels (fabric impregnation concentration of 0.125 mg/cm^2)." This was based upon an estimate of a soldier wearing a treated uniform for 18 hours per day, seven days per week over a 10-year period. Consequently, even though soldiers may wear the uniform when not deployed, no ill effects due to either acute or long-term exposure are likely.

3. We cannot test for specific adverse reactions of infants whose clothing may be washed with permethrin treated uniforms for ethical reasons. However, research detailed above suggests such reactions would be exceptionally rare. Again, the Army has more than 17 years experience using permethrin and we have no observed or anecdotal reports of such reactions.

4. It is critical that Soldiers deploying to OEF/OIF have uniforms treated to prevent insect bites. Arthropod vectors such as mosquitoes, ticks, flies and mites are capable of spreading more than 60 diseases, some of which can be fatal. More than 840 OIF Soldiers have contracted leishmaniasis, including four with visceral leishmaniasis. Soldiers serving within the continental United States are also vulnerable to arthropod borne diseases such as West Nile virus and Lyme disease. Protecting soldiers with permethrin and other repellents is the right thing to do.

5. Our point of contact for this action is LTC David West, Proponency Office for Preventive Medicine – San Antonio, at DSN 471-6612, commercial (210) 221-6612, david.west2@amedd.army.mil.

FOR THE SURGEON GENERAL.

JOSEPH G. WEBB, JR.
Major General
Deputy Surgeon General

Encl
as

DEPARTMENT OF THE ARMY
U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
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REPLY TO
ATTENTION OF

MCHB-TS-OHH

16 August 2004

MEMORANDUM THRU U.S. Army Materiel Command (AMCPE-SG-H/LTC Nasir Siddique), 9301 Chapek Road, Fort Belvoir, VA 22060-5527

FOR Program Manager-Clothing and Individual Equipment (AMSRD-NSC-IP-A/ Ms. Kathy Swift), 10170 Beach Road, Fort Belvoir, VA 22060-5820

SUBJECT: Input to the Safety Confirmation for the Permethrin Treated Battledress Uniform (BDU), Health Hazard Assessment Program Project No. 69-MP-4540-04

1. References. A list of references is provided in Appendix A.

2. Summary.

a. The Army's Health Hazard Assessment (HHA) Program is an Army Medical Department initiative in cooperation with and in support of the Army Materiel Acquisition Decision Process. A specific objective of the program is to enhance soldier performance and readiness by minimizing the effects of health hazards in the workplace (e.g., field operations, training devices, weapon systems, and clothing/individual equipment). The proponent for the HHA Program is The Surgeon General (TSG); however, TSG has designated the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) as the Lead Agent. The HHA Program supports your compliance with HHA requirements contained in DODI 5000.2 and Army Regulations (ARs) (references 1-5).

b. We are providing you with information to support a Safety Confirmation for the upcoming Milestone C and type classification for the use of Battledress Uniforms (BDUs) factory-treated with the insect repellent permethrin, as requested in your memorandum (reference 6). The HHA Reports (HHARs), summarized below, are still valid, unless the concentration of permethrin applied to the BDU material has increased above 0.125 mg/cm^2.

Enclosure

3. The HHA Program has completed a number of HHARs on the use/application of permethrin to the soldier's BDU over the past 20 years. Matrixed input to the HHARs was provided by our Toxicity Evaluation, Entomology, and Occupational Medicine Programs. Those HHARs and HHA-related reports are summarized here:

a. 1984 (reference 7). Recommended approval for clothing impregnation with permethrin at a concentration of 0.125 mg/cm^2 and requested additional information on each proposed application process.

b. 1987 (reference 8). Provided a toxicity review and recommendation for the selection of permethrin containing emulsifiers, and exposure controls for on-site impregnation methods and storage of impregnated uniforms.

c. 1994 (references 9, 10, and 11).

(1) Permethrin exposures in the civilian manufacturing environment do not fall within the scope of the Army's HHA Program. The handling, use, storage and disposal of Permethrin is the responsibility of the chemical manufacturer and fabric finisher and subject to local, state, and federal occupational safety and health regulations.

(2) The National Research Council's Committee on Toxicology (COT) concluded:

(a) Soldiers wearing the permethrin impregnated BDU are highly unlikely to experience adverse health effects at the suggested Permethrin exposure level (fabric impregnation concentration of 0.125 mg/cm^2).

(b) The risk of adverse health effects in garment workers handling permethrin impregnated fabric is smaller, because their dermal exposure is estimated to be less than that of soldiers.

(c) Soldiers wearing the permethrin impregnated BDU in field operations will benefit from protection from tick and mosquito bites, which in turn will protect them from Lyme Disease, malaria, viral encephalitis, and other insect-transmitted diseases.

(d) There are some gaps in the toxicity and exposure data for permethrin; however, the COT believes there are sufficient data to conclude that the wearing of permethrin impregnated BDUs or working with permethrin impregnated fabric will not lead to adverse health effects in military personnel or garment workers.

(3) No additional recommendations were found to be necessary other than compliance with the recommendations provided in 1987 (reference 8).

4. The Army HHA Program assumed that the use of permethrin at the concentration of 0.125 mg/cm^2 for impregnating BDUs was approved and they were being provided to soldiers operating in areas with a high risk of exposure to biting arthropods. Arthropod exposures traditionally have resulted in large medical treatment costs and reduced readiness for Army units; now avoidable costs due to the use of permethrin impregnated BDUs and related equipment. Our assumption is based upon the facts that:

a. Allied military services are using permethrin treated BDUs.

b. The U.S. Centers for Disease Control and Prevention recommends the use of permethrin treated clothing, shoes, and bed nets for travelers (including children and pregnant women) (reference 12).

c. The application process is patented by the U.S. Army (reference 13) and commercially available permethrin impregnated clothing and related items are approved/registered by the U.S. Environmental Protection Agency for the general public's use (reference 14).

5. Direct inquiries regarding this matter to the undersigned or the HHA Program point of contact (POC), Mr. Robert Gross, at DSN 584-2925 or COM 410-436-2925. The contributing programs and POCs within USACHPPM include the Toxicity Evaluation (Dr. Will McCain, DSN 584-7388 or COM 410-436-7388) and Entomology (Ms. Sandra Evans, DSN 584-3613 or COM 410-436-3613) Programs. Please complete and return the electronic version of USACHPPM Form 323.

FOR THE COMMANDER:

TIMOTHY A. KLUCHINSKY, JR
MAJ, MS
Manager, Health Hazard
Assessment Program

CF:
TRADOC
DLA/DES-E (Mr. Jan Reitman)